

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
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OFFICE OF
AIR AND RADIATION

**Summary of ENERGY STAR® Specification Development Process and Rationale for Pre-Rinse Spray Valves
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I. Introduction and Background

On September 21, 2005, EPA informed all stakeholders that it would no longer pursue an ENERGY STAR specification for pre-rinse spray valves due to Congress's passing of the Energy Policy Act of 2005. This action set a Federal minimum efficiency standard for pre-rinse spray valves at 1.6 gallons per minute (gpm), which is the level that EPA was proposing for ENERGY STAR.

EPA will continue to monitor the market for pre-rinse spray valves and may reevaluate its decision in the future if the market changes. In addition, EPA will continue to promote efficient pre-rinse spray valves in its marketing to the foodservice industry.

This memorandum provides a summary of the specification development process for pre-rinse spray valves. It contains the following information:

- Summary of the Final Draft specification
- Summary of key milestones in the development process
- Summary of comments provided by stakeholders
- EPA's rationale for not finalizing an ENERGY STAR specification for pre-rinse spray valves

II. Summary of Final Draft Specification

Key elements of the Final Draft ENERGY STAR specification for pre-rinse spray valves are described below.

- The specification was intended to cover pre-rinse spray valves, which consist of a spray nozzle, a squeeze lever that controls the water flow, and a dish guard bumper. These devices use a spray of water to remove food waste from dishes prior to cleaning in a commercial dishwasher. They are usually placed at the entrance to a commercial dishwasher or may also be located over a sink, in conjunction with a faucet fixture.

- To be eligible for ENERGY STAR qualification, it was proposed that a pre-rinse spray valve model meet or exceed the criteria for both flow rate and cleanability.
 - Flow Rate is the maximum amount of water, in gallons, that can flow through the pre-rinse spray valve per minute. Flow rate is expressed in gallons per minute or gpm at pounds per square inch (psi). EPA proposed that a model's measured flow rate must be less than or equal to 1.6 gpm when tested at 60 psi.
 - The second half of the Final Draft ENERGY STAR specification specified a cleanability requirement of no more than 26 seconds per plate. Cleanability is the effectiveness of the pre-rinse spray valve to remove soil from the plate before it is placed in a dishwasher.
- To avoid any consumer confusion, EPA proposed that pre-rinse spray valve models with multiple settings, such as shower, mist, and pulse, meet the ENERGY STAR criteria at all settings in order to earn the mark.
- The Final Draft pre-rinse spray valve specification referenced ASTM Standard F 2324-03: Standard Test Method for Prerinse Spray Valves. This standard is well known in the industry and measures both flow rate and cleanability.

III. Key Milestones of Specification Development

- Over the course of about nine months, EPA worked on a specification for pre-rinse spray valves, which included the following key milestones:
 - Two draft versions of the specification were released for stakeholder comment. All draft versions of the specification and stakeholder comments were posted to the ENERGY STAR Web site, with approval from the submitters.
 - Several pre-rinse spray valve models were tested and evaluated by staff at PG&E's Food Service Technology Center in order to inform the development of specification levels.
 - Throughout the development process, EPA ENERGY STAR staff coordinated with their counterparts in EPA's Office of Water. The goal was to develop a robust specification that delivered long-term energy and water savings.
 - On July 25, 2005, Congress passed the Energy Policy Act of 2005, which included a Federal minimum efficiency standard for pre-rinse spray valves. To comply, units manufactured on or after January 1, 2006 must have a flow rate of not more than 1.6 gpm.
 - On September 21, 2005, EPA notified all stakeholders that it would not finalize and implement its ENERGY STAR specification for pre-rinse spray valves.

IV. Summary of Stakeholder Input

EPA received substantial stakeholder input on the Draft versions of its ENERGY STAR pre-rinse spray valve specification. Of note, many of the stakeholders provided support for the Final Draft specification. For example, EPA received the following feedback:

- "every element of this program seems right on target;"
- "The Committee (the Consortium for Energy Efficiency's Kitchens Committee) supports ENERGY STAR as it moves forward with a PRSV (pre-rinse spray valve) program;" and

- “both the Eligibility Criteria and the Partner Commitments are very well done.”

Key stakeholder comments are summarized below, along with EPA responses. Please note that EPA did not respond widely to stakeholder comments on the Final Draft because they were received a few weeks before the Federal minimum standard was announced.

- One stakeholder suggested that EPA modify the pre-rinse spray valve definition to reflect different configurations that may be provided to allow for greater throughput. For example, in some operations, the unit’s actuator clip is removed so that it is permanently on; then, it is mounted vertically to a rigid pipe and plumbed for on/off operation by a foot pedal.

EPA Response: EPA chose not to incorporate this change because these types of modifications are often made in the field after the unit has left the manufacturer’s factory. As such, the manufacturer cannot certify the unit’s efficiency in accordance with the test procedure.

- One stakeholder group questioned why EPA was deviating from its typical practice of setting an ENERGY STAR specification that could be met by approximately 25% of available models.

EPA Response: The top 25% guiding principle is sometimes adjusted based on market conditions, such as number of market players, lead times for manufacturers to design new specifications, and variations in energy use across models. In product markets with few manufacturers and few total available models—like pre-rinse spray valves—a greater percentage of the market is often represented by ENERGY STAR in order to ensure that the specification does not favor one manufacturer and/or one technology or design approach.

- A manufacturer suggested that EPA consider changing its flow rate requirement from 1.6 gpm to 1.0 gpm.

EPA Response: This comment was received around the same time as the announcement of the new Federal minimum efficiency standard for pre-rinse spray valves. As such, EPA did not take any specific actions. However, this perspective is valuable and may be considered in a future specification, if deemed appropriate.

- While supportive of a Tier 2 specification approach, some stakeholders encouraged EPA to launch its initial specification with only Tier 1 criteria. This would allow EPA to evaluate the market under Tier 1 and to use this information to inform future Tier 2 criteria at a later date.

EPA Response: EPA decided not to pursue a Tier 2 specification and removed all references to Tier 2 in its Final Draft specification. EPA indicated that it would monitor and evaluate the market (including new product designs, user satisfaction, and product life) once the final specification took effect to determine when new efficiency targets were needed.

- Another stakeholder suggested that EPA implement parallel or concurrent specification tiers rather than successive, more aggressive tiers over time.

EPA Response: EPA explained that the suggested approach was inconsistent with the ENERGY STAR philosophy and program design. As a single attribute label with a unique

specification for each product category, ENERGY STAR makes it easy for consumers to identify energy-efficient models (i.e., they simply choose ENERGY STAR and don't have to educate themselves about the various levels and savings opportunities associated with them) and minimizes complexity and labeling costs for manufacturers.

- One stakeholder group voiced concern about pre-rinse spray valve performance problems caused by either very high (e.g., 80 psi) or low (e.g., 40 psi) water pressure within a building.

EPA Response for High-Pressure Issues: In the Final Draft specification, EPA proposed educating users to turn down their valve or tap as needed to reduce excessive splashing or spraying. However, based on further discussions with stakeholders, EPA agreed that a better approach would be to encourage consumers to address instances of high water pressure by contacting their local water utility or plumber to inquire about installing a pressure regulation device.

EPA Response for Low-Pressure Issues: To increase its understanding, EPA conducted additional testing of standard and low-flow pre-rinse spray valves at 40 psi. The results were that the flow rate moderately decreased and the cleanability time moderately increased; this was the case for both standard and low-flow units, although the impact on cleaning time was modestly greater for low-flow. Of note, the efficient low-flow models were rated well below the proposed 1.6 gpm flow rate level (when tested at both 60 and 40 psi). As such, EPA concluded that relaxing the flow rate requirement to allow for increased flow would not change overall performance, based on current flow rates in the low-flow market and given that low water pressure is an issue for any spray valve. As an alternative, EPA planned to provide user education about the performance of extreme water pressures in its program communications.

- This same stakeholder group noted that hot water temperatures vary across facilities and affect the cleaning performance of pre-rinse spray valves.

EPA Response: EPA concurred and proposed to address this issue by indicating optimal operating conditions (i.e., 60 psi, 120°F) in its messaging on the ENERGY STAR Web site and in other materials.

- It was suggested that the cleanability requirement be relaxed to no more than 30 seconds per plate.

EPA Response: Given that most of the known pre-rinse spray valve programs in the United States use 26 seconds per plate, EPA retained the 26-second proposal in the interest of harmonization and consistency.

- Another stakeholder recommended that certification with ANSI/NSF61-2003e "Drinking Water Systems Components – Health Effects" be added as an ENERGY STAR requirement for pre-rinse spray valves.

EPA Response: After further consultation with this commenter, EPA decided that requiring this certification was outside the scope of ENERGY STAR. Through ENERGY STAR, EPA strives to ensure that efficient models meet, or in some cases exceed, basic product safety requirements. However, since people are not normally expected to drink from pre-rinse

spray valves, EPA considered compliance with ANSI/NSF61 an added benefit for those models that could meet it.

- Based on concerns with the cleanability test, one stakeholder suggested that any references to ASTM Standard F 2324-03 be eliminated from the Final Draft specification.

EPA Response: EPA disagreed with this position and remained confident that the ASTM Standard served its intended function of screening products based on their basic ability to clean dishes. The cleanability test was designed to ensure a minimum level of cleaning performance and was not developed to be representative of a real world cleaning environment, such as a restaurant. Finally, EPA noted that the ASTM Standard measures both cleanability and flow rate. Eliminating the ASTM Standard would have left EPA without any means to measure and compare product models.

- One manufacturer asked that the Tier 1 effective date be delayed until October 2005.

EPA Response: EPA maintained an effective date of August 1, 2005 in its Final Draft specification because the majority of stakeholders provided written comments supporting this date. Further, some recent market research identified several manufacturers with at least one qualifying model.

- One stakeholder group encouraged EPA to coordinate with the Plumbing Manufacturers Institute (PMI) to launch the specification and to collect unit shipment data.

EPA Response Regarding a Product Launch: EPA contacted several of the manufacturers to gather their thoughts on the best venue for launching the ENERGY STAR pre-rinse spray valve specification. All who responded felt that the North American Association of Food Equipment Manufacturers (NAFEM) Show was an appropriate site for promoting ENERGY STAR and qualifying pre-rinse spray valves to specifiers, end-users, and foodservice professionals. In addition, some manufacturers suggested working with PMI to make an announcement at the PMI Fall Meeting in mid October. ENERGY STAR representatives initiated contact with PMI to introduce ENERGY STAR and to gauge their interest in working with EPA. However, all launch preparations were discontinued when EPA decided not to pursue the ENERGY STAR specification for pre-rinse spray valves.

EPA Response Regarding Unit Shipment Data: As noted in the Partner Commitments, EPA is willing to work with a third party, *as selected by the manufacturers*, to collect unit shipment data. If the specification had been finalized, EPA would have worked closely with NAFEM, PMI, and/or other organizations to collect the required data.

- It was suggested that the specification include a requirement to comply with the national plumbing standard ANSI/ASME A112.18.1-2003.

EPA Response: EPA agreed with the stakeholder that ENERGY STAR models should meet all applicable industry standards, such as ANSI/ASME A112.18.1-2003. However, in most cases, EPA does not list these standards in its specifications, as they can be numerous, may vary by region, and are often revised over time. It is the ENERGY STAR Partner's responsibility to ensure that its products meet all applicable national and local standards.

V. EPA Rationale for Not Finalizing the Pre-Rinse Spray Valve Specification

EPA uses a consistent set of criteria in the development and revision of specifications for ENERGY STAR qualified products. These criteria guide EPA in its decision making and help EPA ensure that the ENERGY STAR mark will continue to be a trustworthy symbol for consumers to rely upon as they purchase products for the home or business and so that their purchases will deliver substantial environmental protection. These criteria include:

- Significant energy savings and environmental protection potential on a national basis;
- Efficiency level is technically feasible while product performance is maintained or enhanced;
- Labeled products will be cost-effective to the buyer;
- Efficiency can be achieved with several technology options, at least one of which is non-proprietary (i.e., not exclusive to proprietary technology);
- Product differentiation and testing are feasible; and
- Labeling would be effective and recognizable in the market.

For pre-rinse spray valves, the following four criteria were met and supported the development of an ENERGY STAR specification.

- *Product Performance is Maintained or Enhanced.*
 - Through its research, EPA learned that not all low-flow designs exhibit comparable cleaning performance. For example, devices that are made to be “low flow” by inserting a flow restrictor in a standard device may not exhibit adequate cleaning performance and therefore jeopardize customer satisfaction as compared with those that are truly redesigned to be low-flow devices. To address this concern, EPA included cleanability requirements in the Draft versions of its pre-rinse spray valve specification to ensure that product quality was not compromised for energy efficiency.
- *Cost-effectiveness.*
 - Market research indicated that some pre-rinse spray valve manufacturers were already meeting the proposed energy-efficiency targets and providing these models to purchasers at competitive prices.
- *Several Technology Options, including some with Non-proprietary Technology.*
 - EPA designed its Draft pre-rinse spray valve specification to be performance-based. This means that it intended to recognize the better performing pre-rinse spray valves in terms of energy and water efficiency without differentiating based on technology.
 - Efficient pre-rinse spray valves save energy by providing a spray pattern with equivalent cleaning performance to standard models, while using a lower flow rate. One manufacturer, for example, has accomplished this by changing the shape of the water spray from a “shower spray” design in their standard model to a “fan shape” design in their efficient model.
 - Of note, the PG&E Food Service Technology Center Web site currently lists four models from four different manufacturers that meet the requirements proposed by ENERGY STAR (flow rate of 1.6 gpm and cleanability performance of 26 seconds per plate or less).

- *Testing Procedure.*
 - The Draft ENERGY STAR specifications referenced an existing ASTM test procedure, already being used by manufacturers to measure product performance.

Below EPA addresses its decision not to finalize the pre-rinse spray valve specification relative to the two remaining criteria.

- *Significant Energy Savings and Environmental Benefits.*
 - Prior to the passing of the Energy Policy Act, EPA projected that a pre-rinse spray valve specification would save the following over the time period of 2005 to 2010: cumulative embedded energy savings of 24 million kWh, cumulative embedded carbon savings of 0.004 million metric tons (MtC), and cumulative water savings of 8,686 million gallons.
 - The introduction of a mandatory standard at 1.6 gpm eliminated these potential savings because the level was the same as ENERGY STAR's proposed voluntary specification.
- *Product Differentiation and Labeling.*
 - Initial testing conducted on EPA's behalf showed significant variation in the flow rate of pre-rinse spray valves available on the market.
 - However, as the mandatory standard is designed to eliminate the least efficient models from the market, EPA anticipates that the range of efficiencies will decrease significantly for at least a period of time. As such, EPA has determined that there is not a current role for the ENERGY STAR mark in the marketplace. EPA plans to monitor the marketplace and may consider a future specification if conditions warrant it.